

A SOLAR-BASED ALTERNATIVE TO THEORIES OF GLOBAL WARMING

by Piers Corbyn, Weather Action, UK © 1997, 1999

1. Summary

The current "conventional" wisdom of man-made global warming is increasingly being called into question and is now clearly contradicted by reliable satellite measurements which indicate that no warming has taken place in the lower atmosphere (troposphere) as a whole over the last 20 years.

Hitherto, critics of the models which are used to support the conventional CO₂-centred greenhouse wisdom have concentrated on questioning the size of man-made effects rather than the fundamental assumptions that underlie those models. However, the failure of conventional CO₂-centred models to explain the observed facts necessitates a new approach.

Here, a new approach is put forward: namely, that the fundamental assumption of the primacy of CO₂ as a greenhouse gas is incorrect; and that, instead, natural forcing factors, especially solar activity, are essentially responsible for temperature changes. In particular, it is posited that solar activity and other natural factors govern the concentration of a number of important primary greenhouse gases (H₂O and O₃, for example) and these in turn control world temperatures, including sea temperatures. These temperatures then determine the natural dynamic equilibrium level of CO₂ which is consequently relegated to the status of a secondary greenhouse gas. This means most of the small quantity of CO₂ emitted by mankind's activity gets rapidly re-absorbed, and any temperature effect it might have is a "second order" effect of little import.

2. The relative importances of different greenhouse gases

There are numerous and mounting observational and theoretical reasons why traditional global climate models, used by the IPCC [Intergovernmental Panel on Climate Change] to make claims of climate change, are failing.¹⁻¹¹ However, the core reason for the failures of these models is now becoming clear: namely, they misunderstand the status of carbon dioxide as a greenhouse gas and overestimate its effects.

2.1 The sizes of greenhouse effects

Water vapour (H₂O), ozone (O₃), carbon dioxide (CO₂), methane (CH₄) and various oxides of nitrogen are all greenhouse gases which, by absorption of electromagnetic radiation and re-emission at different wavelengths, cause "greenhouse warming". The relative importance of these gases on different time scales is determined not by their absolute average effects—which, if constant, will have no bearing on climate change—but by the variation of their heating effects, here termed their "greenhouse importance" (GI).

The absolute greenhouse effect of water vapour is twice as large as that of CO₂ in its long-term, average, greenhouse effect (IPCC report), but more importantly it varies hugely in concentration in time and space. This means that the greenhouse effects of H₂O are much more important than greenhouse effects of CO₂.

However, traditional CO₂-centred models assume that water vapour variation is small on the time scales considered, and so it

is ignored. This assumption is invalid for two reasons:

(i) There is strong evidence that water vapour varies by large amounts on all time scales.²⁰

(ii) Water vapour content of the atmosphere, it appears, is strongly influenced by solar activity (such as changes in magnetic, particle, UV and X-ray effects) which varies by significant factors on all time scales.²⁰ As evidence of the reliability of this statement, it should be noted that knowledge of these effects is already used in the Solar Weather Technique (SWT) of long- and medium-range forecasting and in "solar factor enhancement" of traditional, short-range forecasts¹³ which work largely by predicting solar-activity-based changes in efficiency of water vapour condensation. Ozone (O₃) is also a powerful greenhouse gas. It shows similarly high variability on all observed time scales and is very strongly influenced by solar activity.¹⁶

2.2 Primary and secondary greenhouse gases

The facts about the relative sizes of greenhouse effects are enough to cast serious doubt on CO₂-centred models. However, examination of the temperature-dependence of CO₂ concentration¹⁻¹¹ shows the necessity to question the assumptions of traditional models. The new concepts of primary and secondary greenhouse gases and the corresponding alternative solar-based model of climate development firmly relegate CO₂ into the category of a secondary greenhouse gas and can explain the failures of traditional models to predict observations.

Ice core measurements covering the last 250,000 years and other observations¹⁻⁴ show that CO₂ levels generally follow temperature changes—not the other way around.²¹ This leads to the inescapable conclusion that the non-CO₂ factors which determine world temperatures, and thereby affect the dynamic equilibrium levels of CO₂, are dominant compared to any independent, CO₂-induced greenhouse warming effect.

What, then, determines world temperatures? There are many natural factors,^{18,19} but the key mediators of world temperatures must be the primary greenhouse gases: water vapour and ozone. This is partly because their GIs are greater than that of CO₂, but also, and more fundamentally, because their equilibrium levels are dictated by external forcing factors, especially solar activity, not temperatures. CO₂ is a secondary greenhouse gas because its concentration is mainly controlled by temperature. (For example, an increase in temperature reduces the absorptivity of the CO₂ by the oceans and results in an increase in atmospheric concentration, and a fall in temperature has the opposite effect.)

Primary greenhouse gases such as water vapour have more influence on world temperatures in the long run than secondary greenhouse gases, such as CO₂, because concentrations of the former are determined primarily by external, independent forcing factors, whereas the concentration of the latter is controlled primarily by temperatures through their effect on dynamic absorptivity rates.

Of course, in general terms, the detailed developments of concentration of some primary as well as secondary greenhouse gases are affected both by external forcing as well as by temperature-dependent feedback mechanisms. For primary greenhouse gases such as O₂ and H₂O, external factors (especially solar forcing) are dominant, whereas for secondary greenhouse gases, especially CO₂, temperature is dominant.

3. The size of solar-activity-based effects in determining world weather and climate

Much has been reported on the effects of solar activity on weather and climate on all time scales, and it has been well pronounced that the most important factor affecting climate over periods of decades is solar activity.^{23,24} In general, Sun-Earth weather relationships concern the high variability of particle, magnetic and some electromagnetic (e.g., UV) fluxes, rather than changes in visible radiance which show small variability.²⁵

There are several observational estimates which show quantitatively that solar-based factors are more significant than CO₂-centred greenhouse effects on various time scales.

3.1 Solar-magnetic modulation of cosmic ray enhancement of cloud formation (time scales of year to decades)

It has been suggested (and tentatively shown) that extra-solar cosmic ray particles induce cloud droplet formation by ionising water molecules. The higher solar magnetic fields present during periods of high solar activity keep some of these cosmic rays out of the solar system and the Earth's atmosphere, thereby reducing their cloud formation role which may result in an increase in temperature of the lower atmosphere or surface.²²

It has been estimated that the effect of this solar magnetic expulsion of cosmic rays by solar activity in the 1980s was to reduce the production of cloud condensation nuclei and hence cloud cover by about three per cent, which corresponds to solar heating reduction of 1.5 Wm⁻². This matches the official estimate of about 1.5 Wm⁻², of the effects of all man-made CO₂ added to the atmosphere so far.¹²

3.2 General solar effects, random accumulation (time scales of days and weeks to decades) and slow changes (time scales of decades to centuries)

Many extremes of weather have been correctly predicted by

the Solar Weather Technique (SWT) of long-range forecasting,^{13,14} which depends on the prediction of solar effects. These extremes can therefore be reasonably attributed to changes in solar activity. Such temperature deviations from normal can be 2°C over a season. Therefore, a random addition of such (in principle, predictable) deviations over 25 years (100 seasons) could easily be (using "random walk" addition and binomial statistics): $2 / \sqrt{100} = 0.2$. Therefore, a 0.4°C change could reasonably be attributed from time to time to solar changes over 50 years. This is comparable to supposedly recent man-made CO₂ effects.

This argument for solar activity effects is even stronger when one considers the slow and extreme changes in solar activity which appear to have caused major cooling in the "Maunder minimum" period of the 17th century.

4. Solar activity magnifiers

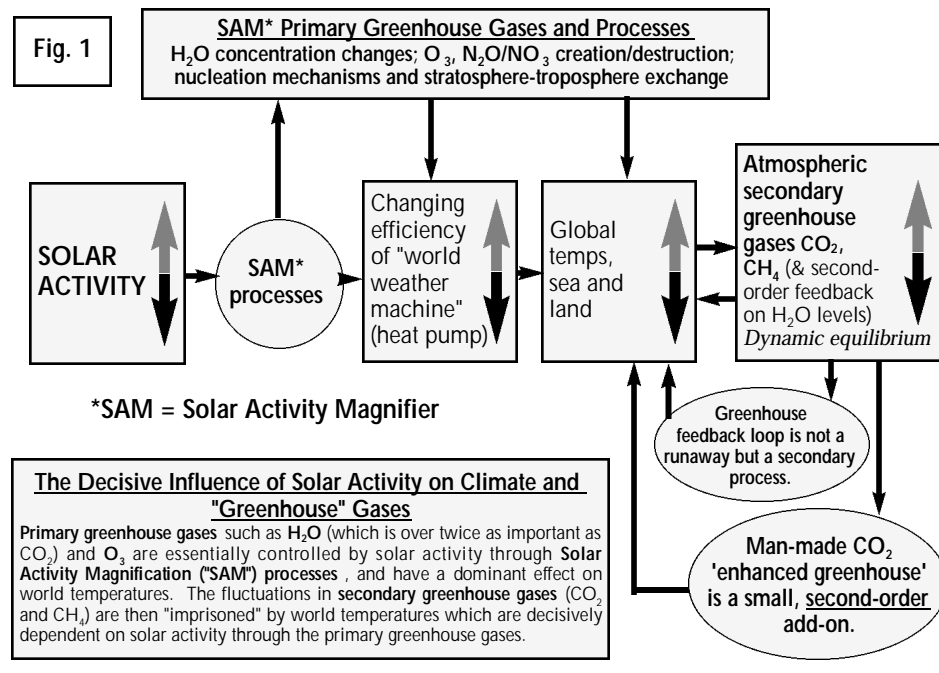
There are a number of Solar Activity Magnifier (SAM) processes which magnify the effects of solar activity on the atmosphere directly, by affecting the concentration of primary greenhouse gases, and, indirectly, by various solar-enhanced greenhouse mechanisms (SEGMs) of stratosphere-troposphere exchange.^{13,15,16} Mechanisms involved include particle and ultraviolet (UV) effects on ozone and many electrical effects on water vapour, and dynamic exchanges.

SAM processes also change the efficiency of frontal systems and the "world weather machine" which pumps heat from the equator to the poles. SAM processes have a decisive influence on world temperatures.

Dozens of potential mechanisms for Sun-Earth weather links and SAM processes are being researched in different parts of the world.¹⁷ This work clearly shows there are a number of channels of SAM processes and that it would be wrong to assume there is just one main SAM process.

The ozone UV effect magnifier process, for example, essentially involves competition between particle and UV (<209 nm) to modulate stratospheric O₃ concentration; which then, in turn, modulates flux of UV (>209 nm) into the lower atmosphere. This process is very sensitive to stratospheric wind directions,¹⁵ as are many SAM processes.

There is mounting evidence of the importance of solar forcing operating on all time scales and that, in particular, the world's most significant weather signals are probably "solar powered". Indeed, the Solar Weather Technique propounds, with increasing evidence, that the two most significant world weather signals—namely, the quasi-biennial oscillation in stratospheric wind (SQBO) and the El Niño phenomenon (ENSO)—are driven or triggered by solar activity.



5. A solar-based weather, climate and greenhouse model

The new approach needed which gives solar activity its proper place is summarised in figure 1, which is a diagrammatic representation showing the alternative theory of global warming.

Under this model (which does not consider volcanic activity at this stage, although this is known to modulate some Sun-Earth links), solar activity dominates the primary greenhouse gases and carbon dioxide is a secondary greenhouse gas.

Man's additions of CO₂ into the atmosphere are a small second-order effect, since the extra CO₂ is reabsorbed into the sea and biosphere at rates determined by temperatures which are controlled by primary greenhouse gases and thereby largely by various aspects of solar activity. The fact that world temperatures have risen (primarily due to external solar forcing and reductions in volcanic cooling) over the last hundred years, and thereby have caused an increase in dynamic equilibrium levels of CO₂, while at the same time mankind's emissions of CO₂ have increased, makes reliable unravelling of effects difficult.

Some estimates of the actual size of any man-made effects have been made, and one study²⁴ suggests that the combined man-made CO₂ and CH₄ effects may be up to one-third of observed changes. However, a closer consideration of the solar-based model would probably substantially reduce this figure.

Why CO₂-centred greenhouse theory is inadequate

1. Facts

- None of the greenhouse campaigns' catastrophic predictions has ever come true, and all their forecasts have been revised downwards.
- Satellite measurements do not show any global warming going on over the last few decades.
- There is nothing special happening in the world's weather now, when compared with the last few hundred years.
- All the so-called extreme events commonly attributed to global warming have been going on at various times for millions of years; for example, African droughts, bits of ice-caps breaking away, floods in America, periods of storms, ozone "holes" over Antarctica and the Arctic.
- 250,000 years of ice-core measurements in Antarctica show that world temperatures control CO₂ levels, rather than the other way around.

- Most of the so-called global warming of the last hundred years is probably in fact in response to relative global cooling 100 years ago (caused by volcanic dust) and other natural processes, many of which are influenced by solar activity.

2. Assumptions and Theory

Current CO₂-centred greenhouse computer models are fundamentally flawed for a number of reasons, such as:

- They ignore changes in water vapour which has a much higher greenhouse importance than CO₂. Its average absolute greenhouse heating effect is at least twice as large as that of CO₂ and, furthermore, it shows huge variations, much of which depend on solar activity (e.g., due to solar particles, UV radiation, etc.).
- They ignore the temperature-dependence of the dynamic interaction of CO₂ with sea water which covers 70 per cent of the world! This temperature-dependence of CO₂ absorptivity makes CO₂ a secondary greenhouse gas.
- They ignore all important interactions of sea life, algae, etc., with atmospheric CO₂.
- They ignore the crucial role of the quasibiennial oscillation of stratospheric winds (SQBO) in weather systems, which displays complex relationships with solar activity.
- They ignore variations in stratospheric ozone, which are strongly influenced by solar activity (both particle and UV).
- They ignore cosmic ray enhancement of efficiency of cloud nucleation, which is strongly influenced by solar (magnetic) activity.

Editor's Notes:

- Piers Corbyn's paper was presented during the Climate Changes Symposium, Bonn, Germany, 10-11 November 1997 (text can be found at <www.weatheraction.com/scipubs/altgreen.htm>).
- Piers Corbyn is the Founder and Managing Director of Weather Action, an independent weather-forecasting company providing long-range weather forecasts for individuals, industry, commerce and agriculture. Weather Action works in conjunction with South Bank University and other institutions in the UK and worldwide to conduct ongoing research into Sun-Earth weather links.
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Endnotes

1. Emsley, J. (ed.), *The Global Warming Debate*, European Science and Environment Forum (ESEF), London, 1996.
- 2-11. *Ibid.*; see references 1-10 on p. 77.
12. Corbyn, P. and M. Golipour (1997), "A Solar Based Alternative to Theories of Global Warming", International Association of Geomagnetism and Aeronomy (IAGA) Uppsala 1997, session 2.15/3.
13. Corbyn, P., K. Bamsi-Yazdi and M. Golipour (1997), "The Solar Weather Technique: A Breakthrough in Long-Range Forecasting", 3rd European Conference of Applications of Meteorology, Lindau, September 1997.
14. Wheeler, D. (1997), "Assessment of SWT Gale Forecasts", 3rd European Conference of Applications of Meteorology,

- Lindau, September 1997.
15. "Solar (direct and modulated) signals in atmospheric and geomagnetic data: Application in the Solar Weather Technique of Long-Range Forecasting", IAGA Uppsala 1997, session 2.15/3.14.
16. "Stratospheric wind modulations of weather/solar wind effect correlations: Applications in SWT", IAGA Uppsala 1997, session 2.15/3.14.
17. See *Proceedings* of IAGA Uppsala 1997 (see endnote 20).
18. Corbyn, P. (1996), "Carbon Dioxide Fluctuations Resulting From Climate Change", in Emsley (ed.), ESEF, 1996, pp. 71-78.
19. Corbyn, P. and M. Golipour (1996), "What is a Global Temperature? The Over-Representation of Temperate and Polar

- Zones", in Emsley (ed.), ESEF, 1996.
20. IAGA, 8th Scientific Assembly of International Association of Geomagnetism and Aeronomy, Uppsala, Sweden, 4-15 August 1997.
21. Jaworowski, Z., T.V. Segalstad and V. Hisdal (1992), "Atmospheric CO₂ and Global Warming: A Critical Review", Norsk Polarinstittutt, Oslo, Norway, 1992.
22. Tinsley, B.A. (1996), *Journal of Geophysical Research*, vol. 101, pp. 21701-21714.
23. See endnote 1 for: Friis-Christensen and Lassen, 1991, 1996; Butler, 1996.
24. *Ibid.*, Baliunas and Jastrow, 1997.
25. Calder, N., *The Manic Sun: Weather Theories Confounded*, Pilkington Press, 1997.

COT DEATH (SIDS): WHAT CAUSES IT, AND HOW TO PREVENT IT

by Dr Jim Sprott © 1999

Toxic mattresses linked to cot death (crib death, or SIDS)

According to a number of published studies, cot death (sudden infant death syndrome, or SIDS) is caused by poisoning by extremely toxic nerve gases: phosphines, arsines and stibines.

These gases are produced in a baby's cot (or any other bed where a baby sleeps) by the action of common household fungi, such as *Scopulariopsis brevicaulis*, on compounds of phosphorus, arsenic and antimony present in the mattress and in certain other underbedding, e.g., sheepskins.

Compounds of the elements phosphorus, arsenic and antimony are very frequently present in bedding. In some instances they are added as part of the manufacturing process (e.g., for fire-retardant or plasticising purposes). In other instances they occur naturally (e.g., in sheepskins, kapok and tree bark).

Phosphines are produced from compounds of phosphorus; arsines from compounds of arsenic; and stibines from compounds of antimony. These gases shut down the central nervous system, resulting in cessation of heart and breathing function, and thereby causing cot death.

Babies can be protected from this gaseous poisoning by enclosing such bedding in a protective cover, e.g., polythene wrapping or a BabeSafe slip-on mattress cover. Provided the mattress is correctly wrapped, bedsharing does not cause cot death.

Face-up sleeping is only a partially preventive measure against cot death, as many babies have died sleeping face up on unwrapped mattresses. The danger of cot death increases when an unwrapped mattress is re-used from one baby to the next.

Analysis of baby bedding on the New Zealand market

In 1996, a wide selection of items of baby bedding on the New Zealand market was analysed for the presence of phosphorus, arsenic and antimony by Rooney Laboratories Ltd of Basingstoke, England. Analysis showed that all three elements were present, phosphorus being especially prevalent. Sheepskins were shown to contain all three elements. Results of the analysis are shown in table 1.

Many New Zealand sheepskins contain significant quantities of arsenic. Sheepskins have been shown by analysis to contain far more arsenic than is necessary to poison a baby by arsine gas generation via the action of common household fungi.

The fungal generation of arsines has been known for over a hundred years. This gas generation caused the deaths of thousands of children in Europe in the 1800s, until its cause was discovered by the Italian chemist Gosio in 1893.

A large proportion of cot deaths in New Zealand occur on sheepskins. Babies should *never* be put down to sleep on unprotected sheepskins.

Success of mattress-wrapping and BabeSafe products

Mattress-wrapping for cot death prevention, which has been publicised in New Zealand for over four years, has had a 100 per cent success rate.

More than 300 cot deaths occurred in New Zealand during the years 1995 to 1998 inclusive, but there has been no reported cot death among the tens of thousands of babies who have slept on mattresses wrapped to the Cot Life 2000 specifications.

The New Zealand cot death rate has fallen markedly since mattress-wrapping commenced in late 1994. From 1994 to 1997, the nationwide rate fell from 2.1/1000 live births to 1.4/1000, i.e., a reduction of 33 per cent. The reduction in the Pakeha (European) cot death rate was dramatic: approximately 65 per cent.

These major reductions in cot death cannot be attributed to the cot death prevention advice publicised by the New Zealand Ministry of Health and the New Zealand Cot Death Association. Between 1992 and 1997 there was no material change in that advice.

Sales information relating to BabeSafe mattress covers shows that tens of thousands of New Zealand babies have slept safely on wrapped mattresses, and also that mattress-wrapping has been enthusiastically adopted by Pakeha parents. The Ministry of Health has confirmed that mattress-wrapping is more prevalent among the Pakeha community than among other ethnic groups.

There is an urgent need for New Zealand baby-care professionals to stress mattress-wrapping advice to the Maori community. Although the incidence of Maori cot death has fallen since mattress-wrapping began, it is still high (3.5/1000). Whereas in the early 1990s the Maori cot death rate was about four times the Pakeha rate, it is now seven times the Pakeha rate. This, of course, reflects the marked decrease in Pakeha cot deaths since mattress-wrapping commenced.

Over the past four years, a considerable body of research has been reported which supports the toxic gas theory for cot death (on which mattress-wrapping is based).

Contrary to media publicity, the 1998 UK Limerick Report did not disprove the toxic gas theory—a fact which has been confirmed in the *New Zealand Medical Journal*. In fact, the Limerick Committee's experiments proved the gas generation on which the toxic gas theory for cot death is based.

Parents, however, are more interested in the practical proof: no reported cot death on a correctly wrapped mattress.

From 1995 to 1998 inclusive, over 300 cot deaths occurred in New Zealand. However, there has been no reported cot death on a BabeSafe mattress or mattress cover, or on a mattress correctly wrapped in polythene sheeting.

Research published on the toxic gas theory of cot death

• *Publication of the toxic gas theory:*

The toxic gas theory for cot death was published by British scientist Barry Richardson in 1994. See: "Sudden Infant Death Syndrome: a possible primary cause", *Journal of the Forensic Science Society* 34(3):199-204 (1994).

• *Publication of proof of the gas generation involved:*

The fungal generation of extremely toxic nerve gases from compounds of phosphorus, arsenic and antimony has been demonstrated many times over the last century. Recent confirmations include: "Toxic gas generation from plastic mattresses and sudden infant death syndrome", *Lancet* 346:1516-20 (1995); "Confirmation of the Biomethylation of Antimony Compounds", *Applied Organometallic Chemistry* 11:471-483 (1997).

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• **Publication of proof of the presence of fungal growth in babies' mattresses:**

Refer to "Sudden Infant Death Syndrome: a possible primary cause", *Journal of the Forensic Science Society* 34(3):199-204 (1994); and "Final Report of the Expert Group to Investigate Cot Death Theories: Toxic Gas Hypothesis" (Limerick Report), UK, May 1998.

• **Publication of proof of the presence of the elements phosphorus, arsenic and antimony in babies' bedding:**

Analyses of bedding have been reported by Dr Jim Sprott in *The Cot Death Cover-up?*, Penguin, 1996.

• **Publication of proof that the re-use of mattresses increases the risk of cot death (a corollary of the toxic gas theory):**

See "Case-control study of sudden infant death syndrome in Scotland, 1992-5", *British Medical Journal* 314:1516-20 (1997).

• **Publication of proof that later babies in a family are more at risk of cot death than first babies (a corollary of the fact that re-use of mattresses increases the risk of cot death):**

See "Risk factors of sudden infant death in Chinese babies", *American Journal of Epidemiology* 144:1070-73 (1997).

• **Publication of proof that face-up sleeping reduces the risk of cot death:**

All studies which show that face-up sleeping reduces the risk of cot death support the toxic gas theory. Face-up sleeping reduces the risk because the gases concerned are more dense than air; they diffuse away from a baby's mattress towards the floor, so a baby sleeping face-up is less likely to ingest them.

• **Publication of proof that cot death babies show physiological effects of gaseous poisoning:**

The study, "Decreased Kainate Receptor Binding in the Arcuate Nucleus of the Sudden Infant Death Syndrome", in *Journal of Neuropathology and Experimental Neurology* 56:1253-61 (1997), is proof that cot death babies have neurochemical deficits consistent with poisoning by nerve gases.

• **Publication of proof that cot death risk varies with mattress type:**

See report of the New Zealand Cot Death Study (1987-1990).

• **Publication of proof that the cot death risk in Britain is lower on PVC-covered mattresses:**

See the CESDI study, UK, reported in *Lancet* 345:720 (1995).

Any part of a baby's mattress which contains the chemicals phosphorus, arsenic and/or antimony is capable of the gas generation which causes cot death. Therefore, if a mattress is covered with a gas-impermeable diaphragm which does not contain those chemicals, the risk of cot death is eliminated.

Accordingly, following removal of those chemicals from British plastic-covered mattresses from 1989 onwards, the risk of cot death in Britain is less on PVC-covered mattresses (which are very frequently used in Britain). Thus the finding by the CESDI study, that babies are less at risk on PVC-covered mattresses, supports the toxic gas theory for cot death.

Preventing cot death with correct bedding and wrapping

The danger of cot death can be eliminated by ensuring that babies sleep on mattresses and underbedding known to be free from the elements phosphorus, arsenic and antimony. The BabeSafe range of mattresses complies with this requirement.

All other types of cot mattress (and any other mattresses on

which babies sleep, e.g. adults' mattresses, mattresses of other children, sheepskins, etc.) must be enclosed in a suitable slip-on mattress cover, such as the one available from BabeSafe, or in a polythene wrapping.

The wrapping should be a thick, natural-colour (not black) polythene sheeting or surgical rubber sheeting. Polythene suitable for this purpose is available at most garden centres. On no account should PVC (polyvinyl chloride) be used for wrapping mattresses.

Place the polythene or rubber over the top of the mattress and down the ends and sides, and then secure it firmly beneath the mattress with strong adhesive tape. The polythene or rubber on the underside of the mattress should not be airtight. It must be airtight on the top and sides of the mattress.

It is imperative to use the correct bedding on top of a polythene-wrapped mattress or BabeSafe mattress or mattress cover. Use a fleecy, pure cotton (flannelette) underblanket and tuck this in securely. Then make the bed using sheets and a pure cotton or pure woollen overblanket. Do not use any of the following as baby bedding: sheepskin; moisture-resistant cot mattress protector; acrylic underblanket; sleeping bag; duvet.

Contacts for BabeSafe products

BabeSafe products are available at baby care retail outlets throughout New Zealand. If you live outside New Zealand and would like to purchase BabeSafe products, contact:

• **in Australia:** Ms Louise Moas, 5/34 Salisbury Rd, Rose Bay, NSW 2029, tel (02) 9327 2208, fax (02) 9566 3022, e-mail <amit@fast.net.au>;

• **in UK:** Mrs Julee Oakley, 31 Ashridge Gardens, Honicknowle, Plymouth PL5 3PZ, tel +44 (0)1752 214089, fax +44 (0)1752 214089, e-mail <juleeoakley@juleeoakley.eurobell.co.uk>;

• **in USA:** Dr David D. Davis, 8381 El Paseo Grande, La Jolla, CA 92037, tel (619) 456 5897, fax (619) 456 9302, e-mail <drd@criblife2000.com>.

If you live elsewhere, contact: BabeSafe, PO Box 58-245, Greenmount, Auckland, New Zealand, tel +64 (0)9 273 9421, fax +64 (0)9 273 9421, e-mail <sprott@iconz.co.nz>.

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Editor's Notes:

Jim Sprott's article was compiled and edited with his permission from the Cot Life 2000 website, <www.cotlife2000.com>, or <www.cotlife2000.co.nz>. Copies of his book, *The Cot Death Cover-up?*, can be obtained from: T. J. Sprott, 10 Combes Road, Auckland 5, New Zealand, tel/fax +64 (0)9 523 1150, e-mail <sprott@iconz.co.nz>.

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TABLE 1: RESULTS OF ANALYSIS OF BABY BEDDING ON THE NEW ZEALAND MARKET

Mfr	New products	phosphorus	arsenic	antimony
A	Waterproof wool mattress cover	+++	-	-
A	Bassinet mattress (polyester inner)	++	-	+++
A	Bassinet mattress (foam inner)	--	-	-
B	Imported PVC cot sheet	+++	-	-
C	PVC-lined cotton mattress protector	++	-	-
D	Acrylic underblanket	+	-	-
E	Sheepskin baby rug	+++++	+	++
F	Lambskin rug	+++++	+	+++
G	Ti-tree bark bassinet mattress	+++	-	-
H	Innersprung cot mattress	++	-	-
I	Ventilated cot mattress	++	-	+++
J	Kapok	++++	-	-
K	Innersprung cot mattress	++++	-	++++
L	Imported innersprung mattress	+++	-	+
No.	Used products	phosphorus	arsenic	antimony
1	Sheepskin baby rug	+++++	+	+++
2	Bassinet mattress	++++	-	-
3	Innersprung mattress	+++++	-	-
4	Foam mattress	++++	-	-
5	Foam mattress	+++++	-	-
6	Innersprung mattress	+++++	-	+
7	Coconut fibre	++++++	+	-
8	Foam mattress	++	-	-
9	Reconstituted foam mattress	+++++	-	-
10	Innersprung mattress	++++	-	+
11	Innersprung mattress	++++	-	+
12	Innersprung mattress	+++++	-	+++
13	Innersprung mattress	++++	-	-
14	Innersprung mattress	+++	-	-
15	Innersprung mattress	+++++	-	-
No.	Cot-death baby bedding	phosphorus	arsenic	antimony
CD1	Pillow cover	++	-	-
CD1	Pillow polyester inner	+	-	+++
CD2	Mattress cover	+++	-	-
CD2	Mattress foam	++	++	-
CD3	Mattress cover	+++	-	-
CD3	Mattress foam	+++	+	-
CD3	Sheepskin rug	++++++	+	++++
CD4	Mattress cover	+++	-	-
CD4	Mattress foam	-	-	-
CD5	Mattress foam	+	-	-
CD5	Mattress cover	+++++	-	-
CD5	Sheepfleece underlay	+++	-	-
CD5	Sheepskin rug	+++++	+	+++
CD5	Wool blanket	++	-	-

Key:

-	= not detected (<10 mg/kg)	++++	= 201 – 500 mg/kg
+	= 10 – 50 mg/kg	+++++	= 501 – 1000 mg/kg
++	= 51 – 100 mg/kg	++++++	= >1000 mg/kg
+++	= 101 – 200 mg/kg		